AMENDMENTS

In the Claims:

Please cancel Claims 92 and 99-111 without prejudice or disclaimer; withdraw Claims 112-123 without prejudice or disclaimer; and amend Claims 87 and 93.

The currently pending and amended claims are below. Please amend the claims following wherein amendment is indicated in parenthesis, wherein the deleted matter is shown by strikethrough, and wherein the added matter is shown by underlining.

Claims 1-86 (Canceled)

87. (Currently amended) A method of producing an isolated, differentiated, mononuclear cell from human umbilical cord blood, comprising:

(a) obtaining a cord blood fraction comprising ~~sample of~~ mononuclear cells from said umbilical cord blood, wherein the mononuclear cells comprise progenitor cells; and

(b) growing said cord blood fraction ~~mononuclear cells~~ from step (a) in a culture medium containing an effective amount of a differentiation agent for a period sufficient to differentiate the progenitor ~~mononuclear~~ cells to a cell of interest,

wherein the cell of interest exhibits both an increase in the expression of genes associated with neurogenesis and a decrease in the expression of genes associated with hematopoiesis in comparison to an umbilical cord blood progenitor cell that has not been cultured in the presence of the differentiation agent.

88. (Previously presented) The method of Claim 87 wherein said differentiation agent is selected from the group consisting of retinoic acid, fetal or mature neuronal cells, BDNF, GDNF, NGF, FGF, TGF, CNTF, BMP, LIF, GGF, TNF, IGF, CSF, KIT, interferon, triiodothyronine, throxine, erythropoietin, thrombopoietin, silencers, SHC, proteoglycans, glycoproteins, neural adhesion molecules, and mixtures thereof.

89. (Previously presented) The method of Claim 88, wherein said differentiation agent comprises retinoic acid and NGF.

90. (Previously presented) The method of Claim 89, wherein retinoic acid is selected from the group consisting of 9-cis retinoic acid, all transretinoic acid, and a mixture thereof.

91. (Previously presented) The method of Claim 88, wherein said differentiation agent comprises neuronal cells selected from the group consisting of mesencephalic cells and striatal cells.

92. (Cancel)

93. (Currently amended) The method of Claim 87 ~~92~~, wherein the progenitor cells are isolated from the mononuclear cells prior to step (b)~~, and the mononuclear cells cultured in step (b) comprise the progenitor cells~~.

94. (Previously presented) The method of Claim 93, wherein the progenitor cells are isolated from the mononuclear cells using a magnetic cell separator to separate out cells expressing a particular CD marker.

95. (Previously presented) The method of Claim 94, wherein the progenitor cells do not express CD34.

96. (Previously presented) The method of Claim 87, wherein the mononuclear cells of step (a) are first subjected to an amount of an anti-proliferative agent effective to eliminate essentially all proliferating cells from the mononuclear cells, and subsequently exposed to a mitogen prior to step (b).

97. (Previously presented) The method of Claim 96, wherein the anti-proliferative agent is Ara-C.

98. (Previously presented) The method of Claim 96, wherein the mitogen is selected from the group consisting of epidermal growth factor and pokeweed mitogen.

Claims 99-111 (Canceled)

112. (Withdrawn) A method of treating a neurodegenerative disease, comprising administering an effective amount of a composition comprising a mononuclear cell isolated from umbilical cord blood to an individual with a neurodegenerative disease.

113. (Withdrawn) The method of Claim 112, wherein the isolated mononuclear cell differentiates into a neural cell after administration to the patient.

114. (Withdrawn) The method of Claim 112, wherein the neurodegenerative disease is selected from the group consisting of Parkinson's disease, Alzheimer's disease, multiple sclerosis, Tay Sach's disease, Rett Syndrome, lysosomal stoarage diseases, ischemia, spinal cord damage, ataxia, alcoholism, amyotrophic lateral sclerosis, schizophrenia and autism.

115. (Withdrawn) The method of Claim 112, wherein the individual is a human.

116. (Withdrawn) The method of Claim 112, wherein the umbilical cord blood is human umbilical cord blood.

117. (Withdrawn) The method of Claim 112, wherein the mononuclear cell is administered systemically.

118. (Withdrawn) A method of restoring neurological activities in an animal having a neurodegenerative disease, comprising:

(a) isolating a mononuclear cell from umbilical cord blood;

(b) determining a site of tissue injury in the individual; and

(c) administering the mononuclear cell to the animal, wherein the cell migrates to the site of tissue injury, and wherein the mononuclear cell differentiates into a neural cell after administration.

119. (Withdrawn) The method of Claim 118, wherein the neurodegenerative disease is selected from the group consisting of Parkinson's disease, Alzheimer's disease, multiple sclerosis, Tay Sach's disease, Rett Syndrome, lysosomal stoarage diseases, ischemia, spinal cord damage, ataxia, alcoholism, amyotrophic lateral sclerosis, schizophrenia and autism.

120. (Withdrawn) The method of Claim 118, wherein the animal is a human.

121. (Withdrawn) The method of Claim 118, wherein the umbilical cord blood is a human umbilical cord blood.

122. (Withdrawn) The method of Claim 118, wherein the mononuclear cell is administered systemically.

123. (Withdrawn) The method of Claim 118, wherein the mononuclear cell is frozen after isolation and is thawed prior to administration to the animal.